

!"#\$%&

CD / , *+B)*+, -l8, (k)kE\$Fk7\$. \$(49kG+.4+#6+-\$k
H.&"), . " IO&. *O"%8"J* '%&"E*) (2)(12"A(), (+), . "D+(). /"E)*. 2"K. 3*&) : . +)"%8"J* '%&"), . "
#/01*)(%+*6"E. &9(1.2"2.1)%&">LMNOE"P!?"Q1% : 3&(2.2".2)* '6(2, : . +)2"), *)"3&%9(/. "
(+2)&01)(%+"*+/"&*(+(-<R"E01, ".2)* '6(2, : . +)2"(+160/ . "21, %%62;"1%66. - .2;"0+(9. &2)(. 2;"
+/"&(+(-"1. +). &2<=", . "#/01*)(%+*6"E. &9(1.2"2.1)%&"(2"&.23%+2('6. "8%&". /01*)(+-%&"

E.9.+748(9."3.&1.+)"%8"1%+)&*1)%&2"2*7"),*)"()("2"/(88(106))%"8(+/"50*6(8(./"

1%+2)&01)(%+"A%&S.&2<"

\(8)74%+."3.&1.+)"%8"2 : *66"'02(+.22.2"&.3%&)"8(+/(+-"8.A%"&+"%50*6(8(./"

336(1+)2)"%8(66"3%2()(%+2<"

I7"GVGU;"),."DE"1%06/"'."2,%&)"'7"03")%!"<!" : (66(%+"21(.+1.;).1,+%6%-7;"

.+-(+..&(+-"*+/" : *),">E=# a 4./01*)./"?A%&S.&2<"

: 36%7 : .+)"-&%A),"%9.&"),."3*2)"A%"/.1*/.2",*2"'..+2)&%+-%8%&(+/(9(/0*62"

A()),."/01*)(%+"%&)"&*(+(-"' .7%+/"**",(-,"21,%%6"/(36% : *;"'0)"86*)"%"&"/.16(+(-"

8%&"),(-,"21,%%6"-&*/0*).2"%&"),%2."A()", "6.22"),*+*"",(-,"21,%%6"/(36% : *<"

=%"1% : 3.)."("+*"S+%A6./-.4(+).+2(9."-6%'*6".1%+% : 7"*+/"%)&*(2.),."2)*+/*&/"

%8"6(9(+-" : %&."M : .&(1*+2 : 02)".*&+"3%2)42.1%+/*&7"1&./.)(*62;".),.&"8&% : "*"

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=, .2."%'2.&9*)(%+2 : %)(9*)."%0&"1*66"8%&"8%102./"./01*)(%+"(+/02)&7"&.2.*&1,")%"

.+*'6."),."80)0&."-6%'*6"1% : 3.)() (9.+22%8"),."D+()./"E)*).2<"T+."A*7")%*/&.22"),.2."

1%+1.&+2"(2)"%(: 3&%9."),."D+()./"E)*).2F"./01*)(%+"272). : <"=A%"S.7"+.. /2"(+), (2"

&.-*&/;"8%&"A, (1,"%3.&*)(%+2"&.2.*&1, "++/"(+/02)&(*6".+-(+..&(+-",*9.),."

!"X(9.+), *)", . 2."1%2)2"9*&7"2(-+(8(1*+)67"*1&%22"0+(9.&2()(.2;(+2). * / "%8"02(+ -), . "

9.& - ."1%2);), . "8(-0&.2" ' .6%A"&.3%&"), . "9*60.2"%8"), . "!V), ;"ZV), ;"*+/"cV), "3.&1.+)(6. "

1%2)2"*")30'6(1"U47.*&"0+(9.&2()(.2<"M+("+1&. *2(+ - "1%2)"&. + / "(2"2.. + "8%&" . *1, "3.&1.+)(6.<"

=, . " : %2)"&.1.+)"%)*6"1%2)"%8"0()(%+ "*" + / "&.50(&. / "8..2"(+1&. *2. / "'7"*")6.*2)"UZW"*1&%22"

66"3.&1.+)(6.2"A, . + "1% : 3&. / "%), . "1%2)"%8"0()(%+ "*" + / "&.50(&. / "8..2"!Z"7.*&2"* - %<"

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K%66*&2!"

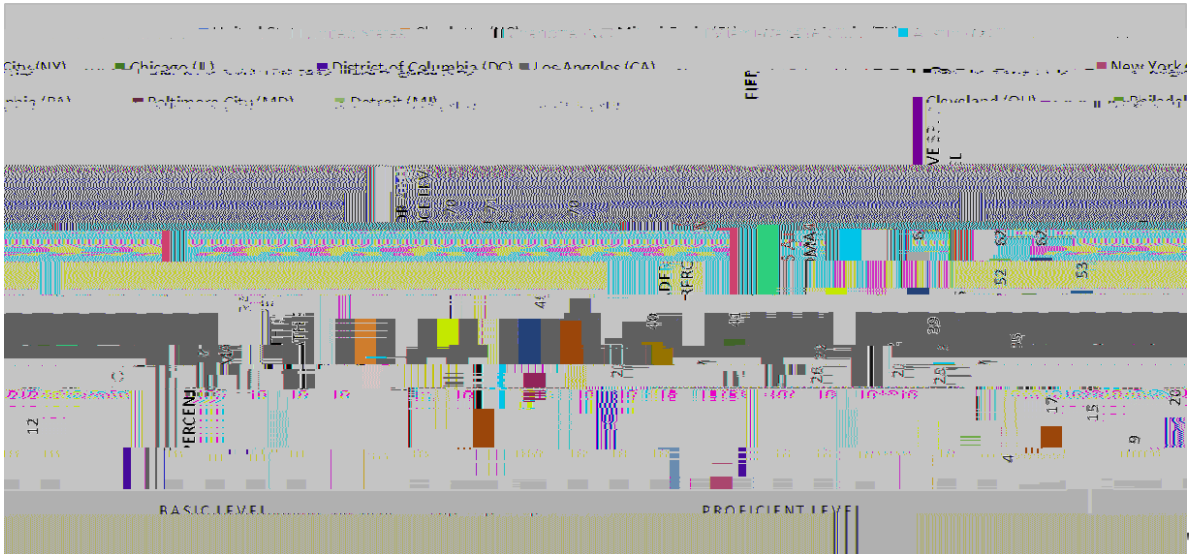
=, . "2.9.&()7"%8"201, "1%2)"(+1&. *2.2"A%06/"' . "/(: (+2, . / "(8"), . &."A.&. "*" + "

11% : 3+7(+ - "(+1&. *2. "(+(+1% : .<" [%A.9.&";), (2"(2"+%

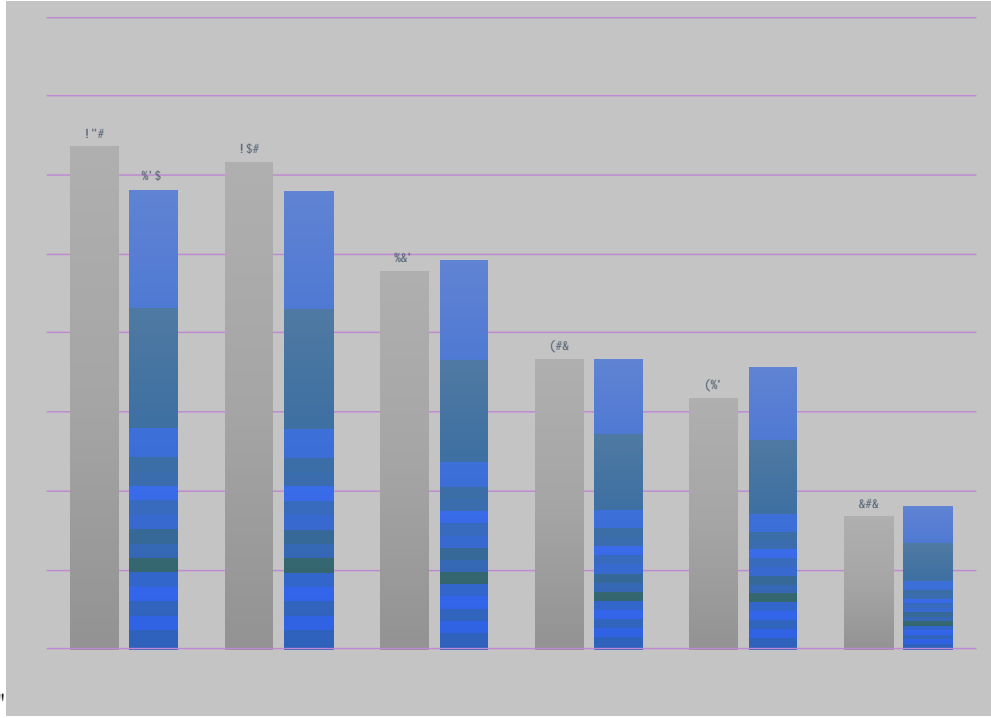
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%8"%+. "2)0/ .+)"*)). +/(+- "%+."%8"), . "6.*2)". \$3. +2(9. "U



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 (+\(-0&.2"Z"*+/"Z';),"GV!Z"=&.+ /2"(+"N+).&+*)(%+*6" a *), . : *) (12"*+/"E1(.+1."E)0/7"
 >=N a EE?">H&%9*2+(S".)*6<"GV!]?;"30'6(2, ./ "'7"LO#E;(+/(1*).2"*"A(/.+(+ "- *3"' .)A.. +"
), ."DE"*+/" , .)%3"3.&8%& : (+ "- +*)(%+2"%8"), ."A%&6/"(+ : *), . : *) (12"*+/"21(.+1."*' (6)7"
)" %),), ."U), "+/"_),"-&*/."6.9.62<=", .2."/ (23*&)(.2" : *7", .63". \$36*(+"A, 7" : *+7"DE"
 1%66. - . - &*/0*).2"*&."+%)A.66"3&.3*&./)"%80+1)(%+(+), ."&.*6"A%&/"%8").1, +(1*6"A%&S"
 03%+ "- &*/0*)(%+ "*" +/"*&."0+* '6.")"(: : ./ (*).67"1%+)&('0.)"%%& - *+(e*)(%+2"*2"
 . : 36%7..2)%", .63" : ..)"*+)*6"+.. /2">GVV!;"O&%22"GVVV?<"



"\(-0&."Z*^"GV!Z"=N a EE"X&* / ."U" a *), "*+/"E1(.+1."M9.&* - .2"

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"\(-0&."Z ' ^"GV!Z"=N a EE"X&* / ."_" a *), "*+/"E1(.+1."M9.&* - .2"

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!cPV"A, .+), .M : .&(1*+"E%1(.)7"%8" [. *6), 1* & . "#+- (+ . . &(+ - "A*2" .2)* '6(2, . /<"N+" !c_c;"
, .) .& : "Q, . *6), 1* & . " .+- (+ . . &(+ -R"8(&2)*33 . * & . /(" +), . "21(. +)(8(1"6(). &*)0& . <"N+"GV!V;"8(9 ."
7 . * & 2" *8) . &"), . (+860 . +)(*6"Y%(+) "& . 3%&)" ' 7"), . "L*)(%+ *6"M1* / . : 7"%8"#+- (+ . . &(+ - " *+ /"), . "
N+2)()0) . "%8" a . / (1(+ . . +)()6 . / " I0(6/ (+ - " * " I .) . &"K . 6(9 . & 7"E72) . : ^"M"L . A"
#+- (+ . . &(+ -g [. *6), "O* & . "H* &)+ . & 2, (3"> \ *+Y(*+ - .) *6<"GVVZ?"A*2"30 '6(2, . /; "=, . "f%0&+ *6"
%8" [. *6), 1* & . "#+- (+ . . &(+ - "A*2"6*0+1, . /<"M"7 . * & "6*") . & ;), . "NN#="&*+2*1)(%+2"%+ "
[. *6), 1* & . "E72) . : 2"#+- (+ . . &(+ - "A*2"6*0+1, . /<" a % & . "& . 1 . +)67;"(+ "GV!Z;"), .) . & : "
Q, . *6), 1* & . " .+- (+ . . &(+ -R"8%& : *667" / . 8(+ . /<"M- *(+;"())(2"%0&" , %3 . ") , *) "A . "A(66"2 . . " *"
2(: (6* & ;"8"+%) " . \$3 . /() . /; "- &%A) , "(+), . "+ . A"8(. 6/ "%8" #K#L< "=, . . /01*)(%+ (+ /02)&7"(2"
8 . &)(6 . - &%0+ / "8%&" . +- (+ . . &2)"%80&), . &"%0&"A%&S"(+2 . &9(1 .) "%; *+ / "8%&"), . "' . + . 8() "%8;"
2%1(.)7<"

=% " , (- , 6(- ,)2% : . "%8") , . "%33%&)0+()(.2") , *) "#K#L " *88%& / 2"2%1(.)7;"A . " + %A")0&+ "
%0&*") . +)(%+)"%) , . "3%22(' (6()(.2") , *)" : *7" ' . "%8"(+). & . 2)"%) "%3 . & *) (%+2"& . 2 . * & 1 , " *+ / "
(+ /02)&(*6" . +- (+ . . &(+ - "& . 2 . * & 1 , . & 2"(+ "3* &)(106* & < "=, . "N+2)()0) . "8%&"T3 . & *) (%+2" d . 2 . * & 1 , "
*+ / " a *+ * - . : . +)"E1(. +1 . ">NL \ T d a E?" / . 8(+ . 2" * & #0%!(*+ . \$0# . #%0) "" *2^"Q*" / (21(36(+ . "
) , *) / . *62"A() ,) , . " *336(1*) (%+ "%8" * / 9*+1 . / " *+ *67)(1*5cB T6)1" * " / 65+ "%8" * * "RQ . 24000 . 249 . 64631 . 55cib

Table 1

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\$%&'()*+,-./0123456789.11#-5&,67628#62168%31#-, . 9#4+33&,21#+25#
/.,&:+36.21#-.025#62#&50/+36.2#625013,;#5+3##+25#01628#+2+;36/+:#9.5&:1#3.<#!=#&2+>:&
>&33&,?62-. , 9&5#+25#369&:6&,#5&/616.2#9+@628#+25A#=#694, .7&#&50/+36.2#1;13&9#
.03/.9&1B#\$%&#.>C&/367&1#.-#'()*+,-./0123456789.11#-5&,67628#62168%31#-, . 9#4+33&,21#+25#
025&,13+25A#9+@,&56/36.21#+>.03A#+25#5&7&: .4#13,+3&86&1#,&8+,5628#&50/+36.2#
4,./&11&1B#*.9&#&D+94&:1#.-#3%4&1#.-#E0&136.21#3%+3#'()*+,-./0123456789.11#-5&,67628#62168%31#-, . 9#4+33&,21#+25#

62&'(2\$*92\$(,3*

G%6/%#/.0,1&1#1%.0:5#>+,8&3&5#-.,#,7&616.2#62#.,5&,#3.#5&/,&+1#7&,+8ű&#
3.#8,+50+36.2#F63%.03#5696261%628#1305&23#:&+,2628#.03/.9&1H#

)((233 9+:9;<')/4*0

G%+3#+,%&#/%+,+/3&,6136/1#.-#1305&231#F%.#+,#,61@#.-#2.3#4&,1613628#3.#
8,+50+36.2#+25#%.F#/+2#10/%#1305&231#>A&236-6&5#1..2&,H##
G%+3#61#3%&#>&13#13,+3&8;#3.#+11682#1305&231#3.#I?!"#/:+11,..91#+/ /.023628#-.,#
7+,6+>6:63;#62#1305&23#+/+5&96/#:&7&:1A#+236/64+3&5#:&+,2628#.03/.9&1A#+25#3%&#
694+/3#.2#10>1&E0&23#3&+/%&,#&7+:0+36.21H##
G%+3#+596116.21#/,63&,6+1%.0:5#>&5#3.#+33,+/3#+#567&,1&#+25#F&::?4,&4+,&5#
/ .% .,3#.-#1305&231#>+1&5#.2#/+4+/63;#/.213,+6231H#

!"#\$ %&'()*+,-./0123456789.148

\$%&'()*+,-./0123456789.11#-5&,67628#62168%31#-, . 9#4+33&,21#+25#
1;13&91#627.:7&5#62#3%&:67&,;#.-#&50/+36.2#1&,76/&1B#L3#61#/ .2/&,2&5#F63%#&210,628#
3%+3#3%&#,68%3#,1.0,/&#:&7&:1#+,&#+7+6:+>:&#F%&,&#+25#F%&2#3%&;#+,&&5&5#+3#3%&#,68%3#
4,6/&#+25#E0+2363;B#\$%&#.>C&/367&1#.-#'()*+,-./0123456789.11#-5&,67628#62168%31#-, . 9#4+33&,21#+25#
&--&/367&2&11A#E0+63;A#7+:0&A#+25#3690&6239#0.2(,6)36.2A#+25#7+:0& A#+&2/;A#

1;13&9b#*. 9 &#D+94:&1# .-#3%4&1# .-#E0&136.21#3%+3# ' * J K#/+2#%&:4#+21F&,#+,&<#

62&'(2\$*92\$(,3*

N. F#/+2#1/%...#>011&1#1&,7628#+#/.023;#:&7&:#I?!"#40>:6/#1/%...#1;13&9#>&#
1/%&50:&5#3.#/.13#&--&/367&:;#3,+214.,3#1305&231#3.#1/%...:1#62#+#369&:#9+22&,#
F63%.03#,&E06,628#&D/&1167&:;#&+,:;#9.,2628#46/@04#369&1#.,#+3&#+-3&,2..2#5,.4?
.--#369&1H#

N. F#/+2#0267&,163;#/.0,1&1#>&#&--&/367&:;#1/%&50:&5#3.#9+D6960+/&P,..9#

.>C&/367&1#.-#QKRL#+,&#/ .23620.01#694,.7&9&23#62#3%&#E0+:63;#.-#&50/+36.2#5&:67&,;#
+25#&50/+36.2#1;13&91#62/:05628#694,.7&9&23#62#3%&#/ .13#E0+:63;A#+25#&--6/6&2/;#.-#
5&:67&,;#.-#&50/+36.2#1&,76/&1#1.#3%+3#9.,+:0=#5&:67&,&5#F63%#,&50/&5#F+13&B#\$%61#
,&E06,&1#3%+3#5+3+>&#/.:;&/3&5#+25#+2+.;0&5#3.#025&,13+25#+25#/%+,+/3&,60,./&11&1#
+25#3.#>&#+>:.#E06/@:;A&236-;#.03/.9&1#3%+3#6256/+3&#+>2.,9+:#4&,-.,9+2/&#.-#+#
4,./&11#.,#3%13&9#1.#3%+3#3%&#,.3#/+01&1#.-10/%#>&%+76.,#9+;#>A&236-6&5#+25#

G % + 3 # + , & # 3 % & # : & + 5 6 2 8 # - + / 3 . , 1 # 3 % + 3 # 4 , & 5 6 / 3 # / % & + 3 6 2 8 # > & % + 7 6 . , # + 2 5 # % . F # / + 2 # 3 % & ; # > & #
& : 6 9 6 2 + 3 & 5 # . , # 9 6 3 6 8 + 3 & 5 H # #

G % + 3 # 1 ; 1 3 & 9 1 # / + 2 # > & # 5 & 7 & : . 4 & 5 # 3 . # 5 & 3 & / 3 # / % & + 3 6 2 8 # 5 0 , 6 2 8 # & D + 9 # + 5 9 6 2 6 1 3 , + 3 6 . 2 H # #
(1 # 3 & / % 2 . . : 8 ; # + 2 5 # 5 6 1 3 + 2 / & # : & + , 2 6 2 8 # 6 2 / , & + 1 & 1 A # % . F # / + 2 # + 2 + : ; 3 6 / 1 # > & # 0 1 & 5 # 3 . #
6 5 & 2 3 6 - ; # 5 6 1 % . 2 & 1 3 # 1 3 0 5 & 2 3 1 # 3 % , . 0 8 # # + 2 + : ; 0 6 2 8 # 1 3 0 5 & 2 3 # > & % + 7 6 . , H # #

6 2 & ' (2 \$ (, 3 * 2 < ') / \$) ((2 3 3 9 + : 9 ; < ') / 4 * 0 \$

N . F # / + 2 # + # 9 + 1 1 6 7 & # . 2 : 6 2 & # 4 , . / 3 . , 6 2 8 # > & # 5 & 7 & : . 4 & 5 # 3 . # 9 6 3 6 8 + 3 & # 3 % & # / . 1 3 #
+ 1 1 . / 6 + 3 & 5 # F 6 3 # % , & 9 . 3 & # 3 & 1 3 6 2 8 # / & 2 3 & , 1 H # # #

! " I \$ \$ H , = 5 / 2 J + * 0 \$) - & \$ 4 0 3 * 2 = 3 \$ + - \$ % & ' () * + , - \$ 7 H 4 % 8 #

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E0&136.21#+,ʶ.,3+23#+25#3%ʶ:6/+36.21#.-#+21F&,628#\.,#2.3#+21F&,628=#3%&9#+,&#
16826-6/+23B# (#/,636/+:#9+11#.-#-./01&5#,&1#+,/%#+33&236.2#.#2#3%2/+36.2#625013,;#9+;#
%&:4#4,.765
/%#+21F&,1B#\$%01A#T]3%&^#40,4.1&#].-^#3%61#4+4&,#61#3.#62763	+2+8&9&23#
1/6&236131#+25#.4&,+36.21#+2+;:131#3.#+55#&50/+36.2#3.#3%&6,#+8&25+B# '50/+36.2#61#+#
1;13&9#+25#+#1&3#.-#10>1;13&9 1#4.3&236+::;#.-&,1#,6/%#4.,>:&9 1B#_6/%#62#3%61#/+1	 &+21#
3%+3#3%e/&436>:&#.-#+2+;:161A#5&1682A#+25#4&,%+41#&7&230+::;#+#:633:&#.#436 9 60+36.2B#
'50/+36.2#4.:6/;?9+@628#6110&1#+,&#>.3%#2.2?3,676+:#+25#/ . 9 4:&DBU#\R:+33#!`Z"A#4B#Sab=#

\$%.08%#F,633&2#.7&,-67&/+5&1#+8.A#3%61#62763+36.2#+25#5&1/,6436.2#.-#3%&#
&50/+36.2#1;13&9#+,&#&E0+::;#+44:6/+>:.5+;#+25#3%&#F.,51#,&+5#+1#3%.08%#R:+33#F&,&#
.2&#.-#.0,#/.23&94.,+,6&1B#\$%&&5#3.#%+7&#+2&&50/+3&5#/6360&2,;#3.#+55,&11#4.,>:&9 1#
.-#1./6&3;#%+1#2.3#569 6261%&5A#2.,#%+1#3%&&5#3.#1.:7%.,>:&9 1#.-#3%&,;#
&50/+36.2+:#1;13&9 #3%+3#F6::#&50/+3%&1&#/6360&21B#J0,#025&,13+25628#.-#% .F#3.#
:&7&,+8%ȷ&,163;#.-#.0,#2+36.2#>;#:.F&,628#3%&#/.13#.-#%68%&,2/+36.2#+25#>;#
4,.765628#&E0+:#+//&11#3.#+#E0+:#63;#&50/+36.2#,&9+621#+#16826-6/+23#/%+::&28&B#

J0,#.>C&/367=#3.#,&2&F#R:+33X1#/+:#3.#+/#36.2B#J0,#8.+:#-.,#5&7&:.4628#3%&1D#

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\ "aa! =# (#,&4 . ,3#3 . #13+@&% . :5&,1# . 2#3%&#/ . 25636 . 2#+25#&--&/367&2&11# . -#4 . 131&/ . 25+ , ; #
&50/+36 . 2#4+ , 3#3F . <# \$ % & # 40 > : 6 / B# B#
MM \ V = < # " M ? M b B#
(6 , & 1 # _ W) A # W & , , & 6 , + # d A # 5 & # (, + 0 C . # (e A # f . , & 2 1 3 & 6 2 #) # \ " a ! b = # * 3 0 5 & 2 3 # 1 & : & / 3 6 . 2 # 6 2 # + #
> , + 0 6 : 6 + 2 # 0 2 6 7 & , 1 6 3 ; < # g 1 6 2 8 # + # 9 0 : 3 6 ? / , 6 3 & , 6 + # 9 & 3 % . 5 B#
B# Z ` \ S = < # V " b ? V S a B#
(@ @ + 2 # Y A # I 0 : 0 2 @ # K ' A # I . / + 1 # Y # \ " a ! Z = # W 6 2 5 6 2 8 # , . > 0 1 3 # 3 6 9 & 3 + > : & 1 # - . , # 4 , . C & / 3 #
4 , & 1 & 2 3 + 3 6 . 2 1 # . - # 1 3 0 5 & 2 3 # 3 & + 9 1 B# B#
" S ` \ " = < # V Z a ? V [Z B#
(3 . 0 9 # h A # Y % & 2 # d A # d 6 0 # (i A # N 1 0 # *) N A # d 6 0 # i # \ " a ! [= # (0 3 . 9 + 3 & 5 # . 2 : 6 2 & # & D + 9 #
4 , . / 3 . , 6 2 8 B# B# ! ` \ [= < # ! Z a ` ? ! Z " S B#
f + 6 : & ; # K) A # K 6 / % + & : 1 #) # \ " a ! ` = # (2 # . 4 3 6 9 6 0 + 3 6 . 2 ? > + 1 & 5 # 5 1 1 # - . , # 1 3 0 5 & 2 3 ? 3 . ? 3 & + / % & , #

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!b#

d . 4&0?\$. , &1#dA#R,6 . , #) # \ " a ! Z = # Y & 23 , + : 60 & 5 # + : : . / + 36 . 2 # . - # % 0 9 + 2 # , & 1 . 0 , / & 1 B # (2 #
+ 44 : 6 / + 36 . 2 # 3 . # 40 > : 6 / # 1 / % . . : 1 B # B # [M < # ! a S ? ! ! S B #
K 63 + : # R A # K . . , & # _ A # d : & F & : : ; 2 #) # \ " a ! S = # B #
c (' # (57 + 2 / & # 4 & , 1 . 2 + : 60 & 5 # : & + , 2628 B # _ & 3 , 6 & 7 & 5 # K + ; # " V A # " a ! b A #
[%334<PPFFFB&2862&&.628/%+::&28&1B..8P/%+::&28&1P:&+,2628B+14D#](#)
c + 25 & 1 % F + , # (A # K & 206 & 1 # \$ A # c & : 1 . 2 # (# \ " a ! ! = # d & + , 2628 # 4 + 33 & , 21 # . - # 0267 & , 163 ; # 1305 & 23 #
, & 3 & 236 . 2 B # B # M b \ ! " = < # ! S ` b S ? ! S ` ` Z B #
c . , 3 % / 033 # Y e A # N . # () A # Y % 0 + 28 # L d # \ " a ! V = #
B #
R & q + ? (; + : # (# \ " a ! S = # ' 50 / + 36 . 2 + : # 5 + 3 + # 9 62628 < # (# 10 , 7 & ; # + 25 # + # 5 + 3 + # 9 62628 ? > + 1 & 5 #
+ 2 + : ; 161 # . - # , & / & 23 # F . , @ 1 B # B # S ! \ S = < # ! S M " ? ! S Z " B #
R % 6 : : 641 # (' A # G + : @ & , # Y e A # ' % , 8 . 33 # K A # _ ; + 2 #) K # \ " a ! [= # L 23 & 8 & , # 4 , . 8 , + 9 9 628 # - . , #
9 6269 + : # 4 & , 30 , > + 36 . 2 # 4 , . > : & 9 1 # 62 # 0267 & , 163 ; # / . 0 , 1 & # 36 9 & 3 + > : 628 B #
B # " V " \ " = < # " b M ?